

## CLAIMS

- Sub A*
1. An apparatus comprising:
    - 2 at least one processor;
    - 3 a memory coupled to the at least one processor;
    - 4 a network interface that couples the apparatus to a network that is coupled to at
    - 5 least one other computer system;
    - 6 a cluster communication mechanism residing in the memory and executed by the
    - 7 at least one processor, the cluster communication mechanism including a sliding send
    - 8 window that communicates at least one ordered message to at least one other computer
    - 9 system without waiting for an acknowledge message from the at least one other computer
    - 10 system before sending out the next ordered message.
  - 1 2. The apparatus of claim 1 wherein each ordered message includes a header with
  - 2 information that indicates whether an acknowledge message for the ordered messages
  - 3 may be delayed and grouped with at least one subsequent acknowledge message.
  - 1 3. The apparatus of claim 2 wherein the acknowledge message acknowledges from
  - 2 one to a plurality of ordered messages.

1 4. A networked computer system comprising:  
2 a cluster of computer systems that each includes:  
3 a network interface that couples each computer system via a network to  
4 other computer systems in the cluster;  
5 a memory; and  
6 a cluster communication mechanism residing in the memory, the cluster  
7 communication mechanism including a sliding send window that communicates at  
8 least one ordered message to at least one other computer system without waiting  
9 for an acknowledgment from the at least one other computer system before  
10 sending out the next ordered message.

1 5. The networked computer system of claim 4 wherein each ordered message  
2 includes a header with information that indicates whether an acknowledge message for  
3 the ordered messages may be delayed and grouped with at least one subsequent  
4 acknowledge message.

1 6. A computer-implemented method for processing a task in a clustered computing  
2 environment, the method comprising the steps of:

3 providing a cluster communication mechanism executing on a first computer  
4 system in a cluster that includes a sliding send window that communicates at least one  
5 ordered message to at least one other computer system in the cluster without waiting for  
6 an acknowledgment from each computer system in the cluster that received an ordered  
7 message before sending out the next ordered message;

8 the cluster communication mechanism sending a first ordered message to at least  
9 one other computer system in the cluster;

10 the cluster communication mechanism sending a second ordered message without  
11 waiting for a response to the first ordered message from the at least one other computer  
12 system in the cluster.

1 7. The method of claim 6 further comprising the step of the at least one other  
2 computer system in the cluster responding to the first and second ordered messages by  
3 sending a single acknowledge message to the cluster communication mechanism that  
4 acknowledges both the first and second ordered messages.

1 8. The method of claim 6 wherein the first and second ordered messages each  
2 include a header with information that indicates whether an acknowledge message for the  
3 first and second ordered messages may be delayed and grouped with at least one  
4 subsequent acknowledge message.

- 1 9. A program product comprising:  
2 (A) a computer program comprising:  
3 (A1) a cluster communication mechanism that includes a sliding send  
4 window that communicates at least one ordered message to at least one other  
5 computer system in a cluster without waiting for an acknowledgment from the at  
6 least one other computer system before sending out the next ordered message; and  
7 (B) computer-readable signal bearing media bearing the computer program.

- 1 10. The program product of claim 9 wherein the signal bearing media comprises  
2 recordable media.

- 1 11. The program product of claim 9 wherein the signal bearing media comprises  
2 transmission media.

- 1 12. The program product of claim 9 wherein each ordered message includes a header  
2 with information that indicates whether an acknowledge message for the ordered  
3 messages may be delayed and grouped with at least one subsequent acknowledge  
4 message.

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